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BUREAU OF
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NEWS LETTER

VOLUME III

No 2

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ALLOTMENT LEDGER (COPY)

Standard Form 1015B
APPROVED BY COMPTROLLER GENERAL U. S.
May 28, 1926

SHEET No. 1

SYMBOL: 36450.47 BU. OF ENTOMOLOGY AND PLANT QUARANTINE 1936 SALARIES AND EXPENSES FOREST INSECTS 13 TRAVEL ALLOTMENT H J BROWN LA 28 BOSTON MASS

10—1720

PREVIOUS BALANCE	SYMBOL	DATE	REFERENCE NO.	DESCRIPTION	REPAYS	AUDITED VOUCHERS	ENCUMBRANCES LIQUIDATED	ENCUMBRANCES AUTHORIZED	TRANS-PORTATION REQUESTS	ALLOTMENTS	UNENCUMBERED BALANCE OF ALLOTMENT
		1935			+	-	+	-	-	+	
00	4701.12	7/1		ALLOTMENT 50						250 00	250 00▲
250 00	4701.12	7/31	A449790	LACKAWANNA RY 7/18					14 29		
				CHEVROLET MOTOR CO 7/18				54			
				ELLINGERS FIREPROOF WHSE 7/10				18 00			217 17▲
217 17	4701.12	8/4		PERRY GREEN GAR 7/9-19				12 39			204 78▲
204 78	4701.12	8/20		NEW ENG T & T 7/1-31				2 50			202 28▲
202 28	4701.12	8/24		H J BROWN 7/1-31				4 25			
				S D HARDY 7/1-31				3 75			194 28▲
194 28	4701.12	8/27		IMPROVED MAIL CASE 7/4				4 95			
				B C INGRAM 7/1-31				3 25			186 08▲
186 08	4701.12	8/27	V-60	CHEVROLET MOTOR CO 7/18		54	52 ERR				
				DO DO DO			-52 COR				
				DO DO DO			54				
			V-3100	ELLINGERS FIREPROOF WHSE 7/10		18 00	18 00				186 08▲
186 08	4701.12	9/3	V2769	PERRY GREEN GAR 7/9-19		12 29	12 39				186 18▲
186 18	4701.12	9/12		WARDS NATL SCI EST 9/1				8 38			177 80▲
177 80	4701.12	9/15		S F PORTER 9/1-30				2 75			
				S D HARDY 7/1-31				-3 75	TR TO AMES		178 80▲
178 80	4701.12	9/16	V-4229	NEW ENG T & T 7/1-31		2 50	2 50				178 80▲
178 80	4701.12	10/5		REFUND FROM LACKAWANNA							
				RY - TR-449790							
				SCH OF COL #20	2 25						181 05▲
181 05	4701.12	10/6		NEW ENG T & T 8/1-31				2 50			178 55▲
178 55	4701.12	10/8	V-4704	PERRY GREEN GAR 10/4		90	1 00	1 00			177 65▲
177 65	4701.12	10/16		ALLOTMENT 203						-25 00	152 65▲
152 65	4701.12	10/17		PERKINS & BANCROFF 9/25				1 77			
				BUCKLEY & SCOTT 9/25				6 00			144 88▲
144 88	4701.12	10/24	V-4987	IMPROVED MAIL CASE CO 7/4		5 00	4 95				144 83▲
144 83	4701.12	10/25		NEW ENG T & T 9/1-30				2 50			
			216513	BOSTON & MAINE RR 10/14					10 25		
			514	PULLMAN CO 10/14					1 75		
				EUGENE DIETZGEN CO 10/18				6 00			
				BAUSCH & LOMB 10/14				5 50			
				REEVES GARAGE 9/18				4 89			113 94▲
113 94	4701.12	10/25	V-5029	B C INGRAM 7/1-31		2 95	3 25				114 24▲
114 24	4701.12	10/30	V-4993	H J BROWN 7/1-31		4 25	4 25				
			1-11305	H J JONES 10/1-15		15 00	15 00	15 00			99 24▲

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

NEWS LETTER

FOR DECEMBER 1935

Vol. III, No. 2 (Not for publication) February 1, 1936

FOSTER H. BENJAMIN

Foster H. Benjamin, Associate Entomologist on the staff of the Division of Insect Identification, died at Georgetown Hospital in Washington, D. C., early January 24, after an illness of about ten days. Pneumonia was the cause of death. Mr. Benjamin was born in Brooklyn, N. Y., September 17, 1895. His undergraduate studies at Cornell were interrupted by service in the lighter-than-air aviation unit of the Navy from April 1917 until the end of the war. He obtained a B. S. degree from Cornell in 1920, and an A. M. degree the following year from the same institution. In 1921 and 1922 he was assistant entomologist of the Mississippi State Plant Board, and from 1922 to 1927, curator of the William Barnes Museum at Decatur, Ill. Following this he was associated with the investigations on the Mexican fruit fly at Brownsville, Tex., being attached to the Plant Quarantine and Control Administration; and in 1929 he was transferred to Florida where he had an active part in the campaign against the Mediterranean fruit fly. Finally, in 1931, he joined the taxonomic staff of the Bureau at Washington, being stationed at the National Museum. Here he remained until the time of his death. In 1920 he married Mary Anne Sheridan, of Ithaca, N. Y., who, with their two children, Richard, aged 13, and Mary Julia, aged 6, survives him. From boyhood, Mr. Benjamin collected and studied Lepidoptera, and he had become an outstanding authority in North American Noctuidae. In recent years he had, in addition, conducted intensive studies on the taxonomy of Trypetidae, especially the genus Anastrepha. His untimely death is greatly regretted.

ACCOUNTING OFFICE LEDGER SHEETS

A number of inquiries have been received concerning the entries on the bookkeeping sheets furnished the various divisions by the accounting office of the Bureau. On the opposite page appears a sample sheet. A study of this sheet may answer some of the questions arising.

in field offices concerning the status of vouchers which would otherwise have to be taken up by correspondence.

At the top of each column a plus or minus sign has been typed to show the way in which entries made in any particular column affect the balance of the account. An explanation of the meaning of the various columns may be of assistance.

When a voucher is received in the Bureau accounting office, it is entered in the authorized column for the amount claimed by the payee and this amount is deducted from the previous balance. When the voucher is finally audited and paid by the Treasury Department, it is entered on the bookkeeping sheets again, but this time the amount is shown in the audited column and in the liquidated column. This second posting will not affect the balance if the voucher is paid in the exact amount claimed by the payee (i.e., the amount previously entered in the authorized column). Such a case is illustrated on line 19, voucher 4229. If the amount appearing in the audited column is less than that appearing in the liquidated column, as on line 15, voucher 2769, the balance will be increased by the amount of the difference; but if the amount appearing in the audited column is more, as on line 28, voucher 4987, the balance will be reduced accordingly. In other words, an entry in the authorized column indicates that the voucher has been received in the Bureau accounting office and charged in the amount stated. The primary purpose of this entry is to insure the prompt setting up on the books of the proper liability, so that the allotment will be protected against overdraft, even if the voucher should be long delayed in audit and payment. An entry in the liquidated column actually cancels the authorized-column entry and the audited-column entry shows the amount finally approved. Therefore, entries in these two columns or in all three columns simultaneously indicate that the voucher has been audited and forwarded to the Disbursing Officer for payment.

Entries in the transportation-request column cover travel performed on transportation requests and are made from the memorandum copy of requests. It is important that travelers forward these copies promptly so that a charge may be made against the proper account to cover the obligation incurred. The transportation-request column is really only another form of authorized column.

When an account has been paid and there is subsequently a refund of all or a portion of the amount paid, this entry is made in the repay column and adds to the balance of the allotment, as shown by the entry on line 22, entered under date of October 5.

The manner of making a correction is shown in connection with the entry of August 27, voucher 60, for the "Chevrolet Motor Company." As will be noted, this voucher was authorized on July 31 for 54 cents, which amount was subtracted from the balance at that time. This particular voucher is now being paid for 54 cents, which is entered in the audited column. This again subtracts from the balance and since it is the final figure for which the account is paid, another entry is necessary to liquidate the previously authorized figure. In this particular instance, 52 cents was erroneously entered in the liquidated column. When this was discovered, the entry was marked "error", a minus 52 cents entry marked "correction" (that is correction of error) was made; then the correct amount, which is 54 cents, was posted. The 54 cents in the liquidated column offsets the 54 cents in the authorized column and, therefore, the balance is not affected.

The entry on line 18, "S. D. Hardy", posted September 15, shows the correction of an item which was entered on this account through error. The entry of the minus figure cancels the entry of the previous figure in the same amount, and therefore reduces the authorized column and increases the amount of the balance.

Cash-discount vouchers are posted in all three columns at the same time, as illustrated by the entry of the "Perry Green Garage." (See voucher 4704, October 8.)

A reduction in allotment is effected by entering a minus figure in the allotment column, which of course subtracts from the balance. (See entry under date of October 16.)

Ledger sheets indicate whether any suspensions have been made from a voucher. This can be ascertained by examining the amounts posted in authorized and audited columns. The payee is advised of any suspensions made, in the form of a Preaudit Difference Statement issued by the Comptroller General of the United States and addressed direct to the payee. This statement does not accompany the check to the payee, but is forwarded in a separate envelope.

In connection with this discussion of ledger sheets, it might be well to say a word concerning overdrawn allotments. All of the obligations against any particular allotment account are entered on the books as soon as received in the accounting office, provided there is sufficient balance in the certifying officer's allotment to cover the liability. If there are not sufficient funds, it is necessary to hold the vouchers until funds are made available, since if this procedure is not followed there is possibility of incurring a deficiency in

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appropriations, which is unlawful. Therefore, if delays in settlement of accounts are to be avoided, the officer certifying vouchers must see to it that the funds to the credit of his allotment are sufficient to cover the accounts he submits.

FRUIT INSECT INVESTIGATIONS

Package fumigation of raisins.--Charles K. Fisher, of the dried-fruit insects laboratory at Fresno, Calif., has found that a new commercial mixture of ethylene dichloride and ethylene oxide, 3 parts to 1, by volume, was effective in killing larvae of the raisin moth (Ephestia figulilella Greg.) when used at the rates of from 5 to 9 cc per 25-pound fiber box of seedless raisins. The liquid was sprinkled on the paper-bag liner of the boxes just before the raisins were introduced.

Codling moth control from banding and orchard sanitation.--L. F. Steiner, in charge of the Vincennes, Ind., laboratory, has reported on two projects on the control of the codling moth by means of certain measures other than spraying. A. J. Ackerman was in immediate charge of one of these projects, which was carried on at Elberfeld, Ind., and constituted a continuation of work started in the spring of 1934. Half of a 40-acre orchard was cleaned up and banded and the remainder was left untreated. The treatment resulted in an average reduction in worm population of 41.9 percent on the basis of worms per 100 apples and 13-1/2 percent on the basis of worms per tree. The actual control effected was intermediate between these two figures. The results in 1935 continued to be favorable, giving an average reduction of 57 percent in injuries per 100 apples and of 45 percent in worms per tree. Incidentally, the early destruction or removal of ground debris apparently reduced very materially the injury caused by the apple flea weevil, which hibernates in trash on the ground. In a second experiment, started in the spring of 1930, a 6-1/2-acre block was used. All of the trees were scraped and banded with chemically treated bands supplied by E. H. Siegler, of the Beltsville, Md., laboratory. The ground debris was not cleaned up but bait traps were maintained in all trees in this area, which was compared with an adjacent similar block of the same size, receiving none of the control measures mentioned. The combination of scraping, banding, and baiting apparently reduced the infestation at least 50 percent.

Ethylene dichloride emulsion for peach borer control.--Oliver I. Snapp and J. R. Thomson report that ethylene dichloride emulsion was the most effective, cheapest, and under the conditions of the fall of 1935 proved to be the safest, of all the materials used in experiments on the control of the peach borer at Fort Valley, Ga. The following dosages of ethylene dichloride emulsion gave best results: Nursery stock, 1/4 pt. of 4 percent concentration; 1-year-old trees, 1/4 pt. of 10 percent;

2-year-old trees, 1/2 pt. of 5 percent; 3-year-old trees, 1/2 pt. of 10 percent; 4-and 5-year-old trees, 1/2 pt. of 15 percent; 6-year-old trees, 1/2 pt. of 20 percent. The ethylene dichloride emulsion caused less injury than other materials. Applications made during the period October 20-25 were more effective, and in some cases safer, than those made during the period October 10-15, the time now recommended for peach borer control in this latitude.

MEXICAN FRUIT FLY

Fruit flies increase, despite weather.--Rather cool and inclement weather over most of the lower Rio Grande Valley during December slowed up inspection work generally. According to weather reports, there were 14 days in the month on which some rain fell at Brownsville. It would appear that this factor might have been responsible for the decrease in the number of Anastrepha ludens Loew trapped had other species decreased proportionately. This, however, was not the case, as all other flies generally taken, except A. pallens Coq., were found in increased numbers throughout the month. Adult A. ludens trapped totaled 8 from 8 premises. Larvae, totaling 112, and 3 pupae were collected from fruit and soil on 4 premises. Only 2 of these infestations were new for the month and not previously reported.

DATE SCALE CONTROL

Progress of work during December 1935.--In the Coachella Valley, Calif., 2,388 palms were inspected from ground and ladders and 743 from the ground only. This completes all ladder work in the valley and all inspection in 10 of the 12 districts. Leaf bases were removed from 17 previously infested palms, and 27 palms were dug out and destroyed in a previously infested seedling garden. In the Imperial Valley 626 palms were inspected from ground and ladders and 58 from the ground alone. Systematic inspection by districts was discontinued. Properties needing further attention were listed and the remainder dropped. No scale was found in the Imperial Valley during the year. The last scale was found in February 1934.

CEREAL AND FORAGE INSECT INVESTIGATIONS

Parasitization of European corn borer by introduced species apparent in eastern New England.--D. W. Jones, of the European corn borer sublaboratory at Melrose Highlands, Mass., reporting on the status of parasitization of the European corn borer in the two-generation area at the close of the 1934 season, and in relation to the first generation in the summer of 1935, says that all field samples of hibernating corn borers collected in the fall of 1934 were taken on a section-random basis, each sample consisting as far as practicable of four subsamples of 25 borers, from the approximate center of the four quarters of the field under observation. The results are shown in the following table.

Locality	Samples	Area surveyed	Parasitization by-- Lydella stabulans var. grisescens R. D.	Inareolata punctoria Roman.	Macrocentrus gifuensis Ashm.	Native species	Total
	No.	Sq.mi.	Percent	Percent	Percent	Percent	Percent
Bridgewater, Mass-	7	28	2.3	- -	*0.6	0.6	3.5
Concord, Mass-----	7	28	0.9	5.2	--	.3	6.4
Falmouth, Mass----	7	28	11.0	1.9	--	--	12.9
Malden, Mass------	28	153	4.7	10.5	--	.1	15.3
Hartford, Conn----	10	28	*1.3	*0.3	--	.4	2.0
Milford, Conn-----	10	28	*.3	--	--	.5	.8
Portsmouth, R. I--	7	28	1.1	.5	--	.2	1.8
Providence, R. I--	7	28	5.5	--	--	.3	5.8
Long Island, N. Y-	28	112	*1.8	*.1	--	--	1.9

*First recovery.

The recovery of M. gifuensis (oriental strain) at Bridgewater, Mass., is the only record of this strain having become established in the two-generation area. Releases of this strain were made in Bridgewater in 1931 and 1932. All recoveries at Hartford and Milford, Conn., followed first releases in the respective localities in the summer of 1934. The total parasitization of 15.3 percent observed at Malden, Mass., including 10.5 percent by I. punctoria and 4.7 percent by L. stabulans grisescens, was found to be distributed generally over the 153 square miles included in the survey. In addition to the recovery records presented in the above table, Chelonus annulipes Wesm., an egg-larval parasite imported from Italy, was recovered for the first time at Dighton, Mass., where no releases had been made since 1929. In the Malden district, where the earliest releases of corn borer parasites were made, the parasitization has always been highest on the borers of the first generation. The following table shows the percentages of parasitization of first-generation borers in the summer of 1935 at 2-mile intervals from the center of the Malden releases, extending outward for a distance of 13 miles. Each area inspected therefore represents a ring two miles wide. A total of 8,100 borers were found.

Area inspected	Borers	Parasitization by -- L. stabulans grisescens	I. punctoria	Native species	All species
	Number	Percent	Percent	Percent	Percent
Center--	100	1.0	12.0	--	13.0
1-----	500	2.2	38.2	0.6	41.0
2-----	1,120	3.8	27.3	.6	31.7
3-----	1,049	3.2	25.3	1.2	29.7
4-----	1,535	2.5	25.1	1.4	29.0
5-----	1,596	2.1	25.8	.4	28.3
6-----	2,200	1.9	17.0	.5	19.4

Bathyplectes tristis Grav. as an internal larval parasite of clover leaf weevil.--According to F. F. Dicke, of Arlington Farm, Rosslyn, Va., a brief account of Hypera punctata Fab., based on observations from March 27 to July 1, was given in the quarterly report for April-June 1935. Collections of cocoons of the species were made at 2- to 3-week intervals throughout the summer and early fall. On September 28 the first prepupal stage was found in a cocoon collected on August 9. On October 4, two cocoons collected on October 3 contained a white and a dark pupa, respectively, an adult emerging from the latter on October 7. On the same date an adult emerged from a cocoon collected on May 20. The adults were common in sweepings on alfalfa and red clover throughout October. The young larvae were found in the H. punctata larvae in November and December. The species was identified by R. A. Cushman, of the Division of Insect Identification, with the statement that this is the first record of the species in the United States.

Low damage to crop by sugarcane borer in 1935.--J. W. Ingram, of the Houma, La., laboratory, reports the following: "This season a new survey system was instituted which consisted in dividing the Louisiana sugarcane section into ten districts, each of which produced around 320,000 tons of sugarcane in 1934. All of the area in each district was known to have about the same degree of borer infestation in past years. Status counts were made on one representative plantation in each district. Infestation counts were made in the varieties Co. 290 and Co. 281, the former being the most common of the lightly infested varieties and the latter the most common of the heavily infested varieties. Joints bored externally were counted in 200 stalks selected in random lots of 10 each in a field of each variety in the front part of the plantation and the same number of stalks of each variety were examined in a field in the back of the plantation. This gave 800 stalks per plantation. Comparison of data obtained by H. A. Jaynes and E. K. Bynum in Trichogramma work showed that the number of joints bored internally was very nearly the same as those bored externally. It is conservatively estimated that there is at least an equal percentage of field loss for every bored joint resulting from the stand of cane being diminished by bored seed cane, plants killed, decreased weight of the bored stalk, and wind breakage. This gives 9 percent injury for each bored joint. The Bureau of Agricultural Economics crop report published December 21, 1935, estimated the value of this year's Louisiana sugar crop at $14,875,000, exclusive of Federal farm benefits. From these figures it is estimated that a loss of $1,400,000 resulted from borer injury in 1935. Borer injury in 1935 was the lowest since 1919, apparently owing to the unusually cold winter that preceded the crop.

Discovery and eradication work on West Indian sugarcane mite.--Mr. Ingram also reports that on October 7, rusty, blisterlike areas were found on sorghum crosses growing in experimental plots at the Houma laboratory. Mite nymphs were found between the leaf sheaths near the top of the infested plants and adults were found embedded in the tissues beneath the blisters. Specimens were forwarded for determination and were found by H. E. Ewing to be Tarsonemus bancrofti Michael. Mites were found only in the area in and around where the sorghum crosses were growing at Houma and on a few plants in the greenhouse. The field area actually infested was about 20 by 30 feet in size. Owing to the small area infested and the possibility of much damage, eradication was considered desirable. An area 90 by 60 feet, which extended to all sides of the infested plants, was treated. This work was conducted in October. Although Digitaria sanguinalis and Panicum reptans were growing in the infested area, the mites were found only on sugarcane.

FOREST INSECT INVESTIGATIONS

Denver laboratory moved to Fort Collins.--In October the forest-insect laboratory was moved to Fort Collins, Colo. J. A. Beal continues in charge. The space now occupied by the laboratory has been offered rent free by the Colorado State Agricultural College. The Rocky Mountain Forest and Range Experiment Station is also occupying quarters owned and donated by the college. At the completion of the new Forestry Building about May 10 both of these organizations and the Colorado Forestry School will occupy space in the new structure.

Plectrodera scalator Fab. damages cottonwood in shelterbelt plantings.--During a trip through the shelterbelt region of Kansas early in December N. D. Wygant, of the Fort Collins laboratory, observed injury by the cottonwood borer (P. scalator) to the cottonwood trees planted this spring in the 4 miles of shelterbelt strips near Larned, Kans. From 40 to 50 percent of the young cottonwoods were killed by this borer during the summer and many of the remaining trees are so severely injured that they may not survive. The activity of the larvae next year will also increase the loss. The young cottonwood trees, 1 year old when planted in the spring of 1935, make up five rows in each of the strips planted at Larned. By the fall of 1935 the trees were from 3 to 6 feet high and 0.4 to 1.0 inch in diameter at the base. The very small cottonwood showed egg scars at the base but no work of the larvae. The injury caused by the adult beetles in making the egg scars sometimes kills small trees, especially if two or more scars are made on a single tree. The larvae work in the trees near the ground level and cause a calloused swellinglike growth. The diameter at the swelling may be nearly twice that a few inches above. The larvae at the time of observation were from 1/2 to 3/4 inch long and were boring in the wood. In Oklahoma, where damage has also been heavy, the adults were flying and laying eggs up to the middle of September.

Bark beetle surveys in California show improved conditions in 1935.--As reported by J. M. Miller, of the Berkeley, Calif., laboratory, the annual surveys conducted by the forest-insect laboratory were completed by November 1. A total of 40 half-section plots were covered intensively by the 1935 survey, as compared to 48 in 1934. The area covered by extensive reconnaissance methods, however, was practically the same as before. Conditions found in the west-side type of central California show that the decline of infestations of the western pine beetle and mountain pine beetle, which became apparent in 1934, continued during 1935. Losses in sugar pine were extremely light in all areas. The same is true of ponderosa pine, except for two areas in the southern part of the Sierra

Forest, where increases of from 200 to 300 percent occurred. One small area in the marginal type of the Stanislaus National Forest was also found, where a sharp increase developed contrary to the general trends of 1935. In the east-side ponderosa type of the Modoc, Shasta, and Lassen National Forests the peak of severe losses caused by the western pine beetle occurred in 1934. Throughout this belt there was a general drop in losses in 1935 of about 30 percent.

Seasonal history studies indicate break in western pine beetle epidemic late in the summer of 1935.--Mr. Miller also reports that studies including the relation of brood development to bark and air temperatures were continued at the Hackamore laboratory on the Modoc National Forest from March 1 to October 30. Although the spring emergence of the overwintering broods was about 2 weeks later than in 1934, brood development caught up with this lag in 1935 and the beetles completed two seasonal generations and started a partial third, which went into the overwintering condition. Quantitatively, however, the infestation followed a very different course from that of 1934. In the seasons of 1933 and 1934 each generation increased in population over the preceding one. This tendency to increase apparently culminated in the spring of 1935, when a very heavy population of the western pine beetle emerged throughout the east-side ponderosa pine areas. Instead of the widely scattered attacks that characterized the infestations of 1933 and 1934, the first seasonal generation of 1935 concentrated in large groups of trees. This grouping habit of attack was also followed by the second seasonal generation. However, with the attack of the third generation there was a very marked falling off in numbers and the attacking habit again became selective and scattered. At the height of the group attacks, trees of all age classes and vigor were taken and, as a result, the average volume of infested trees declined from that of preceding years, when the beetles showed a tendency to select large, overmature, and slowly growing trees. This habit of group attack just before an epidemic starts to decline has been observed in the majority of the western pine beetle cycles that have been studied. The decline of the recent epidemic in northeastern California was expected in 1935, as various factors indicated that this point had been reached in the cycle.

Salvage cutting reduces western pine beetle infestation on Lassen National Forest.--P. C. Johnson, Berkeley, reports that the Fruit Growers Supply Company, cooperating with the Forest Service and the Bureau of Entomology and Plant Quarantine, carried on an experimental salvage operation near Susanville, Calif., in 1935. The purpose of this work was to determine the feasibility of logging and manufacturing insect-killed timber under existing conditions. The Berkeley laboratory, in order to follow the entomological phases of the program, established a 320-acre sample plot on the salvage area. This sample plot was first cruised late in June when the cutting of infested timber was started. Another cruise was made in September, when it was found that the infestation in the salvage zone had been materially reduced. Timber losses that developed during the progress of the cutting in July and August were only about 40 percent of those outside the salvage zone. This was apparently due to the breaking up of tree groups while the attack was forming and to the removal of beetles from the woods by carrying them out to the mill in infested logs. Although it is too early to draw definite conclusions, indications are that salvage cutting during the summer period and removal of infested logs from the woods may have a beneficial effect in reducing seasonal losses.

Fir engraver increasing in California fir forests.--According to Mr. Miller, recent surveys in California have revealed a decided increase in infestations of the fir engraver beetle. The dead and dying white firs are particularly noticeable to anyone traversing the fir type throughout many areas of the State. Much of the loss occurs as top-killing although many trees are being killed outright. Scolytus ventralis Lec. is one of the most important insect enemies of white fir in California and the timber losses for 1935 will be heavier than any during the last five seasons.

European spruce sawfly.--H. J. MacAloney, of the New Haven, Conn., laboratory, reports that the last field observations on Diprion polytomum Htg. were made on December 3. Cold weather the last week in November had apparently killed all the larvae that had survived the earlier cold periods. Larval mortality is heavy late in the fall in Connecticut. Larvae reared in the laboratory from eggs laid on December 4, 5, and 6 were nearly full grown on December 31. They were reared at room temperature, which ranged from 60° to 75° F., and at a humidity which remained fairly constant at 30 percent.

Parasites of larch sawfly.--P. B. Dowden, New Haven, presents the following table which shows the results of dissection of samples from five more lots of Nematus erichsonii Htg. cocoons received from L. W. Orr in Michigan.

Source of material	Nematus erichsonii Htg.					
	Received	Dissected	Alive	Killed by fungus	Containing Hymenoptera	Containing Tachinidae
	Number	Number	Number	Number	Number	Number
Huron National Forest (Luzerne Camp)	850	50	47	3	0	0
Huron National Forest (Tawas District)	700	50	48	2	0	0
Chequamegon National Forest	700	25	25	0	10	0
Nicolet National Forest	400	25	22	3	9	*1
Upper Michigan	285	25	22	3	9	1

*Specimen dead.

Native elm bark beetle a vector of Dutch elm disease.--W. D. Buchanan, of the Morristown, N. J., laboratory, reports that the Dutch elm disease fungus has been isolated from 1 of 8 small elm trees into the bark of which adults of the native elm bark beetle (Hylurgopinus rufipes Eich.) had bored in constructing hibernation burrows. The beetles used in this experiment issued from elm wood infected with the fungus. Although the fungus had previously been isolated from beetles of this species collected in the field in an area where the disease was prevalent, and although it had been shown that beetles issuing from diseased material could transmit the fungus into elm wood, this is the first time the fungus has been isolated from a living tree which beetles from diseased wood had attacked under controlled conditions.

Nematodes infesting adult elm bark beetles.--C. H. Hoffman, Morristown, states that living adults of H. rufipes, collected in Connecticut and New Jersey, were found to be heavily infested with nematodes. Nematodes were also found in adults of the smaller European elm bark beetle (Scolytus multistriatus Marsh.) from New Jersey. Larvae of the two beetles from the same sources were not found to be infested.

Salvaging timber killed by southern pine beetle.--A marked improvement in the lumber markets during the past few months has made possible salvage operations of beetle-killed timber in nearby Virginia. At present three portable mills are in operation near Fairfax, salvaging what is left of some 5,000,000 board feet of mature shortleaf pine killed during the period 1931-34 by an outbreak of Dendroctonus frontalis Zimm., following the unprecedented drought of 1930. Probably about 1-1/2 million board feet will be saved. In much of the timber the sapwood is already largely destroyed by insects and decay. Poor markets and an oversupply of lumber during the depression prevented the timber from being salvaged while it was sound.

Termite control.--Termite control has developed into quite a big business during the past year. Because of keen competition, some of the companies engaged in this work have not hesitated to use unethical means of advertising or to exaggerate to the householder the seriousness of the situation, when such methods have helped to increase business. Furthermore, the chemicals used sometimes create fire hazards. In one instance two workers were overcome and a considerable loss resulted from fire damage. Recently there has been a tendency by some organizations to help remedy this situation and to fall in line with approved practices recommended by the Bureau of Entomology and Plant Quarantine. Some of the national organizations of these commercial companies have taken initial steps to eliminate unethical advertising and in so doing have requested the Bureau's aid. Better Business Bureaus have also cooperated and have published articles emphasizing that structural methods constitute the only permanent means of termite control. Many of the State Inspection Bureaus, particularly in the Middle Atlantic and Central States, have lately shown unusual interest in methods recommended by commercial concerns because of the possibilities of fire hazards.

GYPSY AND BROWN-TAIL MOTH CONTROL

Gypsy moth work summarized.--Up to December 15, 1935, under the W. P. A. projects, the following numbers of workers were employed under the gypsy moth projects in the different States as follows: Maine, 154; New Hampshire, 81; Vermont, 493; Massachusetts, 561; Rhode Island, 47; Connecticut, 599; New York, 170; New Jersey, 72; Pennsylvania, 731; total, 2,908. During the first week in December an average of 2,202 men, from C. C. C. camps, were employed on gypsy moth work in the area east of the barrier zone. They were assigned as follows: New Hampshire, 148; Vermont, 689; Massachusetts, 694; and Connecticut, 671. During this week over 46,000 gypsy moth egg clusters were destroyed, about 40,000 of these being in Massachusetts.

Accomplishments in brown-tail moth control.--Under the W. P. A. emergency project, the numbers employed on brown-tail moth work up to December 15 were as follows: Maine, 229; New Hampshire, 427; Massachusetts, 474; Rhode Island, 7; Connecticut, 16; total, 1,153. The numbers of brown-tail webs cut in various States up to November 30 were as follows: Maine, 39,544; New Hampshire, 39,490; Massachusetts, 19,783; total, 98,817. The numbers of trees cut up to November 30, these being mostly large wild cherry and old apple trees, were as follows: Maine, 11,295; New Hampshire, 29,592; Massachusetts, 79,041; Rhode Island, 20; total, 119,948. About 552 acres densely grown up in small wild cherry, beach plum, and other food trees, were cut over and all of the favored growth removed.

PLANT DISEASE CONTROL

Barberry eradication.--At the close of the week ending January 11, more than 1,200 men were employed in connection with the barberry-eradication program. In some States, particularly those west of the Mississippi River, severe winter weather has brought about a temporary suspension of field activities. In the Middle West and Lake States some rural eradication work was still under way; however, most of the crews have been assigned to survey work in the larger cities. Unless weather conditions during the latter part of January and February are unusually severe, it is expected that at least 1,000 men will be employed throughout the winter. A summary of the progress made in barberry eradication with emergency funds shows that since August 1933, more than 53,000 square miles of area in 17 States have been given a careful inspection, with the result that 5½ million barberry bushes have been destroyed on 13,250 properties.

Ribes eradication in southern Appalachian region, summary.--During the calendar year 1935 (up to and including November 30), a total of 3,791,289 Ribes bushes were eradicated in the seven States in this reginn where blister rust control work is being carried on. Virginia led in the number of Ribes removed, 1,311,672 bushes being destroyed in this State alone. A total of 1,063,663 acres were worked in this Ribes-eradication program and 30,345 man-days of labor were consumed. The above figures include work done under the W. P. A., the E. C. W., and the P. W. A. programs.

Winter blister rust control project in Northeastern States.--The major winter project scheduled for blister rust control under the W. P. A. program in the Northeastern States will consist of mapping pine and control areas. A total of 437 security wage workers will be employed on this work in 67 counties. The work will consist of locating white pine areas, preparing preeradication maps, mapping protection zones, and, where necessary, marking the boundaries of such zones in the field. The maps will be used by the crew foremen in conducting *Ribes*-eradication work in 1936 and will assist greatly in carrying out the work.

COTTON INSECT INVESTIGATIONS

Microbracon kirkpatricki Wilk. in relation to the boll weevil.--J. W. Folsom, Tallulah, La., has been studying *M. kirkpatricki*, a parasite of the pink bollworm introduced from Egypt, in relation to the boll weevil. During the past season complete details were obtained on the life history and habits of 596 parasites raised from the eggs on larvae of the boll weevil. In October cooler weather retarded development and the low temperatures in November stopped oviposition. No adults issued from cocoons after November 10. The adults are remarkably hardy. On January 2 more than 100 adults and several hundred cocoons were still alive, despite temperatures below freezing. On December 27 the temperature in the cages dropped to 16° F. *M. kirkpatricki* has proved to be more resistant to cold and a more effective boll weevil parasite than *M. mellitor*, the most abundant native species.

Boll weevils entering hibernation.--The number and condition of boll weevils entering hibernation this fall has, as usual, varied considerably in different sections. Late in the fall as the weevils entered hibernation they were reported to be more abundant than usual in the vicinity of Florence, S. C., and at College Station and Port Lavaca, Tex., but fewer than usual were reported from Mississippi, Louisiana, and Oklahoma. Although the number of weevils entering hibernation in the vicinity of Florence was greater than usual, the sudden freeze in November caused heavy mortality. The regular Spanish-moss examinations early in December showed 27.4 percent alive, as compared to 84 percent in 1934 and 77.6 percent in 1933. This fall 153 live weevils per ton of moss were found, as compared to 416 in 1934 and 111 in 1933. In the moss examinations at Tallulah, La., only 19 live weevils per ton were found, as compared to 192 in 1934, 365 in 1933, and an average of 317 for the last 10 years. An average of 31.4 percent of the weevils were alive in the moss examinations in the vicinity of Tallulah. The field observations and moss examinations were also substantiated by the catches on flight screens. An average of 15.5 weevils per screen were taken during October at Florence, in comparison with 7 and 11.5 weevils in 1934 and 1933. During October, November, and December an average of 15.2 weevils per screen were caught at Tallulah in 1935, 200 weevils in 1934, and 287 in 1933. The defoliation of the cotton by the leaf worm over large areas has undoubtedly reduced greatly the number of weevils entering hibernation this fall.

Overwintering pink bollworm in soil.--Examinations for determining the overwintering pink bollworms in the soil were made in December in 25 representative fields of the Presidio Valley by A. J. Chapman, H. S. Cavitt, and M. H. Hughs. Surface trash was removed and 5 square yards of soil from each field was dug to depths of from 3 to 5 inches. The soil was washed in screen boxes until only the trash remained, and this was then carefully examined for larvae. The population in the individual fields ranged from 1.4 larvae per square yard, or 6,860 per acre, to 43.6 per square yard, or 213,640 per acre, with an average of 12.51 per square yard, or 61,308 larvae per acre. Data on the soil population are available for 9 of the 25 fields for the years 1932-35. The average number of worms per square yard in these fields for the 4-year period was 1.01, 2.28, 1.37, and 13.46, respectively. The records for 1932 are hardly comparable because of the heavy floods before the examinations were made. The unusually heavy population this fall is probably due to the higher field infestation and the lower temperatures in September and October, which caused more worms to enter the long-cycle stage. Other tests were made to determine the overwintering population at various dates in October and November and at what dates the fields should be cleaned to reduce the soil population. Rows of cotton were stripped of all fruit on October 1, October 15, November 1, and November 15. (The frost date was November 12.) Soil samples from these rows yielded 6.4, 12.4, 20.6, and 26.4 larvae per square yard, respectively.

Pink bollworm insecticides tested.--The results of the insecticide tests for pink bollworm control, conducted by A. J. Chapman and associates at Presidio, Tex., last season, have been received. In a series of field plats barium fluosilicate and cube were used as dusts and sprays; a cube-sulphur mixture containing 1 percent rotenone as a dust, and a proprietary preparation as a spray. Insofar as possible, applications were made at 4-day intervals, dusting early in the morning and spraying in the afternoon. From 10 to 14 heavy applications were used. The degree of control was determined by the percentage of infested bolls, the number of worms per boll, the percentage of bolls with eggs, and the number of eggs per boll from samples collected every 2 weeks. The control obtained was poor with all the insecticides tested. In the plats dusted and sprayed with barium fluosilicate there was considerable reduction in the percentage of infested bolls early in the season, but this was decreased as the season advanced and the control was more evidenced by a reduction in the number of worms and eggs per boll. With the cube-sulphur dust there was no definite reduction in the number of infested bolls in some instances and practically no reduction in the number of eggs. The cube spray was slightly more effective than the barium fluosilicate spray in reduction of both worms and eggs, but was not as effective as barium fluosilicate dust. The proprietary preparation gave no indication of control.

Toxicity tests for tarnished plant bug.--The results of cage tests with several insecticides against Lygus pratensis L., conducted by G. L. Smith, J. C. Clark, and A. L. Scales, Tallulah, La., are summarized herewith. Cotton plants and weeds on which the insects normally occur were caged and dusted after the insects were introduced. Checks were used in each series, as the mortality in the checks was rather high and varied considerably. Derris root containing 4 percent rotenone killed 25 percent of the adults on weeds and 72 percent on cotton. Derris diluted with sulphur and clay was slightly more effective in the weed cages and less effective on cotton than was the straight derris. Pyrethrum containing 0.5 percent total pyrethrins and an activator killed 63 percent of the adults on weeds and 50 percent on cotton. Diluting pyrethrum with from 1 to 3 parts of sulphur and clay only slightly reduced its effectiveness. Sodium fluosilicate, either straight or mixed with equal parts of sulphur, gave approximately 40 percent kill on weeds and cotton. Phenothiazine, mixed 1 part to 9 parts of clay, killed 55 percent of the adults and was more effective than when used undiluted or diluted with sulphur. Calcium arsenate gave an average kill of approximately 38 percent of the adults when used undiluted and slightly better when mixed with sulphur, especially on weeds. Paris green killed 86 percent of the adults and 71 percent of the nymphs. When mixed with sulphur, 1 part paris green to 3 and 9 parts of sulphur, the kill was 61 and 58 percent of the adults and 77 and 71 percent of the nymphs, respectively. Sulphur alone killed 36 percent of the adults and 60 percent of the nymphs. The mortality in the check cages ranged from 10 to 36 percent and in most instances was higher in the cotton than in the weed cages.

PINK BOLLWORM AND THURBERIA WEEVIL CONTROL

Inspection.--A considerable amount of gin trash was inspected in the Salt River Valley of Arizona during the first part of the month (December), these inspections being distributed generally throughout the valley. This area was first found to be infested with the pink bollworm in the fall of 1929 and, as a result of special control measures, the infestation was eradicated within the next two or three seasons. Inspections have been made each year since, and the continued negative results this year are a further indication of the success of the eradication program. A small amount of gin trash is still being inspected for pink bollworm in northern Florida, results being negative all season. In the Tucson area of Arizona gin trash is still being inspected, and a few additional Thurberia weevils are being found. All of the men previously operating gin-trash machines are now doing laboratory inspection at San Antonio, where the results have been negative to date.

Field clean-up in Big Bend of Texas.--Rapid progress has been made in the cleaning of cotton fields in the Big Bend area of Texas throughout December. This was largely due to the fact that picking was completed so that the acreage was available for cleaning. By the end of the month stalks had been cut on 1,524 acres, raking completed on 886 acres, and the material burned on 526 acres. It is thought that the clean-up will be completed by the middle of the coming month.

Road-station inspection.--During December four of the seven confiscations made at the Marfa, Tex., road station were found to be infested, 23 living and 1 dead larvae being found. All of the specimens were found in small lots of seed cotton, two of the lots being found in trucks, one in a mattress, and the remaining one in a pillow. Owing to the fact that the field clean-up in the Big Bend is so nearly completed, the road station was closed on December 31. During the 4 months the station was operated, 10 of the interceptions made were found to be infested and 336 living and 13 dead larvae were found, also 8 pupae.

Thurberia-plant eradication.--The eradication of Thurberia plants in southern Arizona with W. P. A. funds has continued to make good progress throughout the month. This work was begun about the first of September and at the end of December approximately 50,000 acres had been gone over and approximately 50,000 plants destroyed. Work is still being carried on in the Tortillita Mountains. It is thought that this range will be completed by the end of January, after which the work will be carried on in the Santa Catalina Range.

Wild cotton eradication.--The eradication of wild cotton in southern Florida is also being carried on this season with W. P. A. funds and very good progress was made during the month, except in the Cape Sable district. Thus far it has been impossible to obtain an adequate force of workers for this district. In December a recleaning was made on some 450 acres. From this area 117 mature, 99,168 seedling, and 1,067 sprout plants were removed. New colonies, involving 31 acres, were discovered; 9,035 mature and 6,035 seedling plants were removed; and a survey for additional wild cotton was made on some 5,500 acres.

TRUCK CROP AND GARDEN INSECT INVESTIGATIONS

Suction light trap efficient against cigarette beetle in tobacco warehouses.--W. D. Reed and E. W. Livingstone, of the Richmond, Va., laboratory, report that continued observations during the 3-year period from 1933 to 1935 in approximately 1,105,000 cubic feet of open-storage warehouses in Richmond, where 10 suction light traps have been operated, indicate, for the period ending December 31, 1935, a decrease of 86 percent in the population of the cigarette beetle, as compared to the number of beetles present during the first year the traps were operated (1933). The normal movement of tobacco in and out of the warehouses, as well as the activities of parasites and winter mortality, have undoubtedly affected the beetle population in these warehouses; however, the records obtained under practical warehouse conditions for the 3-year period involved indicate that the suction light traps have been of much value in reducing the beetle population.

Contact insecticides for rhododendron white fly.--Randall Latta, of the Sumner, Wash., laboratory, continuing laboratory studies on the control of Dialeurodes chittendeni Laing, tested alliphatic thiocyanate, both direct and in combination with oil, and nicotine sulphate against five lots of heavily infested rhododendrons. The results indicated that neither the alliphatic thiocyanate, applied direct, nor the nicotine sulphate were very effective, both giving an average mortality of approximately 40 percent. The alliphatic thiocyanate combined with the oil produced a satisfactory mortality, ranging from 86 to 100 percent. This result, however, only equals that obtained by the oil alone in previous tests, indicating that the thiocyanate was ineffective.

Derris effective in control of adult blister beetles.--K. B. McKinney, of the Phoenix, Ariz., laboratory, reports that in cage tests a derris dust mixture containing 1 percent rotenone with talc as a diluent proved effective in killing approximately 99 percent of the adults of the blister beetle Epicauta crassitarsis Maydell when the dust was applied as a contact insecticide. Beetle mortality continued to take place for 6 days after the treatment was applied.

Growth of strawberry seedlings stimulated by treatment for control of cyclamen mite.--F. F. Smith, of the Beltsville, Md., laboratory, reports that, after being treated with hot water for the control of the cyclamen mite, all infested strawberry seedling plants have developed new leaves free from injury. It is possible that the plants were stimulated into activity by the immersion in hot water (20 minutes at 110° F.); however, because of continued mite injury, they may not have reached a normal state of dormancy, and when this condition was relieved the new growth developed quickly. A sudden flush of growth following the killing of the mites, which may readily be taken for plant stimulation resulting from the treatment, has been observed on many other kinds of plants.

Derris dust controls squash capsid in Arizona, tests indicate.--K. B. McKinney, Phoenix, reports that recent field tests have demonstrated the efficiency of a dust mixture of derris and talc containing 1 percent rotenone in combating the squash capsid (Pycnoderes quadrimaculatus Guen.) on late squashes and cucumbers. Three applications of this material were made on September 24, October 2, and October 10, respectively. All plants involved in the tests were killed by an early frost, but yield records obtained prior to that time indicate an increase of approximately 67.9 percent of squash on the treated plants, as compared to the untreated checks, and practically a 100 percent increase in the yield of cucumbers, as no fruits had developed to a marketable stage on the untreated check plots up to the time they were killed by the frost.

Pea weevil control increases germination of seed peas.--A. O. Larson, of the Corvallis, Oreg., laboratory, reports that results obtained by airplane dusting with calcium arsenate dust against the pea weevil on Austrian field peas in Oregon during the growing seasons of 1933 and 1934 show a reduction in the population of adult weevils in dusted fields, as compared with the same fields before they were dusted and with other comparable fields in the same locality which were not dusted. Tests of peas harvested from the fields dusted with calcium arsenate showed that germination averaged 90.6 percent, as compared to an average of 78.4 percent germination from the fields not dusted. This development constitutes an important factor in the production of seed, because regulations require that first-class seed should show a germination of 90 percent or higher. Apparently the difference in germination is directly attributable to the difference in weevil infestation in the two series of fields involved, since detailed studies have demonstrated that there is a direct correlation between the degree of weevil infestation and the percentage of germination of peas.

Cigarette beetle larvae resistant to hydrocyanic acid gas.--As the result of preliminary laboratory experiments designed to determine the lethal dosages of hydrocyanic acid gas to larvae of the cigarette beetle, L. H. Davis and E. W. Livingstone, Richmond, Va., report that full-grown larvae of Lasioderma serricorne Fab. have a high resistance to hydrocyanic acid gas, at least during exposure at a temperature of 82° F. With a 5-ounce dosage per 1,000 cubic feet, it was necessary to expose the larvae to the gas for 7 hours at 82° in order to obtain a complete mortality, whereas with a 10-ounce dosage an exposure of only 5 hours was required to obtain a similar result.

Tolerance of bulbous iris to hot-water treatment.--C. F. Doucette and Ralph Schopp, Sumner, Wash., continuing experiments on the control of the Narcissus bulb fly (*Merodon equestris* Fab.) by means of hot-water treatment, report the following conclusions as regards the tolerance of bulbous iris to this method of control: "The tolerance of bulbous iris, variety Wedgewood, for late August hot-water treatment at 111° F. for 1 hour is only fair, and at longer durations ($1\frac{1}{2}$ and 2 hours) is decidedly poor. In some bulbs a quiescent condition is induced, resulting in failure to make leaf growth but with bulb reproduction progressing on the stored food of the planted bulbs, the bulb being much reduced in size, as compared with the original. The principal effect of the hot-water treatment on iris bulbs appears to be the induction of quiescence. This condition is more pronounced as the duration of the treatment is increased. If the bulb grows normally it shows no particular detrimental effect."

INSECTS AFFECTING MAN AND ANIMALS

Mosquito-control project established.--On December 18 a local W. P. A. mosquito-control project was approved for Multnomah County, Oreg. H. H. Stage, of this Bureau, who is stationed at Portland, is assisting the management in an advisory capacity. The project is divided into three parts and is set up for a period of 12 months. The divisions are as follows: (1) 215 laborers with foremen, timekeeper, etc. for brush cutting, clearing, ditching, and diking of mosquito-producing areas; (2) 25 laborers and 5 student entomologists to carry on direct control measures by means of oil during April, May, and June; and (3) an engineering party of 6 to make a map of Multnomah County showing the extent of the mosquito-breeding grounds. This map will be of considerable benefit to future control work. The general plan and estimates for the project were drawn up by Mr. Stage.

Screw worm survey in the Southwest.--O. G. Babcock, of the Sonora, Tex., laboratory, recently made a screw worm survey of western and northern Texas, New Mexico, Arizona, and California. The following are excerpts from his report: "In general, the medicines recommended by the U. S. Bureau of Entomology and Plant Quarantine and the Texas Experiment Station, i. e., dehydrated pine tar oil sp. g. 1.065 and the benzol, were almost unknown in the Panhandle of Texas and practically all of the territory west of Fort Stockton to El Paso. The same was true in New Mexico, Arizona, and California, except at certain points where a pine-tar salesman had been. The ranchmen who had tried the pine tar oil were very well pleased with it. It was found that almost any kind of medicine was being used, generally whatever was at hand. Some of the remedies used were as follows: Chloroform, alcohol, creosotes of several kinds, generally saponified, crude pine tar, pine-tar oil, gasoline, kerosene, crude carbolic acid, coal tars, slaked lime, salt, lubricating oil, mentholatum, turpentine and lard, iodine, arsenic and zinc, ammoniated mercury, nicotine, grease, calomel, dirt, horse manure, and a solution of turpentine-phenol-egg, besides many combinations of the above chemicals. The screw worms were more severe in New Mexico in 1935 than for several years past. The 4 years' drought was broken a month later than the period for normal fall rains. The greatest damage occurred at the lower altitudes in the southern and central parts of the State. A few localities reported screw worms present for the first time."

FOREIGN PARASITE INTRODUCTION

Parasite shipments to Hawaii.--One shipment consisting of two species of Braconidae was forwarded in December from West Africa by R. H. Van Zwaluwenburg. Several consignments have also been sent from Brazil by D. T. Fullaway, these comprising one larval parasite and a staphylinid predator of fruit fly larvae, two Encyrtidae parasites of the pineapple mealybug, and two coccinellid predators of the coconut scale.

Parasite shipments to Puerto Rico.--S. M. Dohanian has now completed the collection and rearing of the Amazon fly (Metagonistylum minense Towns.) in British Guiana. A total of 6,575 adult flies were shipped by air express to Puerto Rico during November and December. Approximately 90 percent of these arrived alive at destination. Small numbers of Stomatodexia diadema Wied. and Bassus stigmaterus Cress., were also forwarded.

FOREIGN PLANT QUARANTINES

Entomological interceptions of interest.--Living and dead larvae of the Mediterranean fruit fly (Ceratitis capitata Wied.) were intercepted at New York on October 31, 1935, in fruits of apple, persimmon, and pomegranate in baggage from Italy. Other records of this fruit fly arriving at New York in baggage from Italy on the same date are as follows: Two living pupae on the calyx end of a pomegranate, one living larva in a box containing various fruits, and one living pupa on a wrapper around a pomegranate. A living larva of the European corn borer (Pyrausta nubilalis Hbn.) was taken at Boston on September 30, 1935, in a pepper in stores from Spain. The scale insect Odonaspis penicillata Green arrived at Washington, D. C., on April 10, 1935, on bamboo in the express from China. Living specimens of the turnip gall weevil (Ceutorhynchus pleurostigma Marsh.) were found at Philadelphia on October 23, 1935, in rutabaga in stores from England. The earwig Chelisoches morio (Fabr.) was intercepted at Honolulu, Hawaii, on September 3, 1935, under the bract of a coconut in cargo from American Samoa. This species has been introduced into California and is recorded on peach trees near Menlo Park. The coccid Leucaspis loewi Colvee arrived at Seattle, Wash., on May 20, 1935, on pine leaves in the mail from Sweden. This species has also been called Leucaspis sulcii Newst. A living specimen of the lycaenid Lampides baetica L. was intercepted at San Francisco on November 11, 1935, on mauna loa leis (Dioclea violacea) in express cargo from Hawaii. A living larva of the cerambycid Acanthocinus aedilis L. was found at New Orleans on November 11, 1935, in pine dunnage in ship's cargo from Belgium. A living adult of the chrysomelid Pseudomesomphalia illustris (Chev.) was taken at Mobile, Ala., on a banana in cargo from Guatemala. A living adult of the banana root borer (*Cosmopolites sordidus* Germ.) was found on June 27, 1935, in a plantain root in the field at Mayaguez, P. R. A living pupa of the pink bollworm (*Pectinophora gossypiella* Saund.) was taken at Norfolk, Va., on September 2, 1935, in a cotton boll in quarters from St. Thomas, American Virgin Islands. Living larvae of the elaterid *Agriotes obscurus* L. were intercepted as follows: At New York on September 16, 1935, in horseradish in stores from Germany; at Washington, D. C., on November 5, 1935, among the roots of *Helleborus niger* (Christmas rose) in cargo from the Netherlands; and at New York on November 6, 1935, on a potato tuber in stores from England. A. G. Boving reports on this wireworm as follows: "One of the most destructive European larvae to truck crop and corn crop. Not found in U. S. A., according to Leng's lists. See: Die Tierischen Schadlinge des Ackerbaues by S. Rostrup and Mathias Thomsen, 1931, pp. 140-142."

Pathological interceptions of interest.--*Ascochyta* sp. was intercepted on cucumber for the first time on December 9 at Mobile in cucumbers from Cuba. Our first interception of *Cercospora foeniculi* P. Magn., was made on December 12 at New York in fennel from Italy. *Discosia artocreas* (Tode) Fr. was intercepted on camellia for the first time on November 25 at San Francisco on material from Japan. *Helminthosporium allii* Campanile was intercepted from Brazil for the first time on December 6 at Norfolk in garlic and was intercepted again on December 28 at Mobile, same host and origin but a different vessel. *Heterosporium allii* Ellis and Mart. was intercepted for the first time on December 18 on leeks from Denmark at Philadelphia and for the second time on December 19 at Baltimore on leeks from Sweden. *Heterosporium echinulatum* (Berk.) Cke. was intercepted from France for the first time on December 30 at Baltimore, on carnations. *Leptosphaeria rusci* (Wallbr.) Sacc. was intercepted for the first time on December 13, at Philadelphia in *Ruscus* from Italy. Our first interception of *Melanospora mathrolianum* Mirande was made at New York on December 16 in tomatoes from Cuba. *Mycosphaerella* sp. was found infecting spinach leaves from Japan intercepted at Philadelphia on December 20. There was inadequate material for study. No such disease of spinach was found listed. A diseased chayote from Syria intercepted at New York on November 28 was infected with what appeared to be a new species of *Phoma*. *Puccinia angelica* (Schum.) Fckl. was intercepted the first time on December 2 at New York in anise from Italy. *Puccinia cannae* (Wint.) P. Henn. was intercepted at New York on cannas from Puerto Rico. Both previous interceptions were made in 1921, in material from Puerto Rico and Panama. *Septoria aucubae* West was intercepted at New York on an *Aucuba* plant from Italy. The only previous interception of this rust was on a plant of unknown origin. *Septoria chrysanthemella* Cav. was intercepted from Bermuda for the first time on November 25 at New York on chrysanthemums in baggage.

Inspection of clipper ships of Pan American Airways Transpacific service.--The air transport plane *China Clipper*, first of three new and larger transport planes to be operated by the Pan American Airways in its trans-Pacific service, arrived at San Diego from the East Coast via Mexico on November 9. An inspection of the plane in the stream a short distance off North Island revealed the presence in crews' quarters of 16 oranges of Mexican origin, which were found infested with Glover's scale and citrus melanose. Captain Musick, the pilot, brought the unconsumed portions of these fruits, together with the peelings, into port for destruction, rather than cast them overboard en route, as the plane followed closely the coast line in its flight, and he felt that it would be unsafe to throw them overboard with the danger of their floating ashore. On her first trip out to Manila and back the China Clipper arrived at the Alameda airport in San Francisco Bay on December 6, 1935, free from contraband plant material of any kind. The Philippine Clipper, a sister ship to the China Clipper, made the next scheduled trip to Manila via Honolulu, Midway, Wake, and Guam, returning to San Francisco at 1:24 p. m., on December 26, after a flight of 17 hours and 35 minutes from Honolulu. An inspection of the plane revealed the presence of several partially consumed fruits of apple, orange, papaya, and one very ripe banana. A package of merchandise belonging to a member of the crew was also found to contain prohibited rice-straw packing. Although the regulations do not prohibit contraband fruits, etc., from being taken aboard these planes in Hawaii, it is a violation of Quarantine No. 13 to bring such material into the territorial limits of the mainland. To prevent recurrences of this kind the company is sending out instructions to all airport and operating personnel, forbidding any fruit or other prohibited plant material from being placed aboard their planes in Hawaii or the other ports of call. Air-express service was inaugurated with the second voyage of the China Clipper. Passenger service will be inaugurated some time in April.

DOMESTIC PLANT QUARANTINES

Citrus canker discovered in Jefferson County, Tex.--Another center of citrus canker infection was recently brought to light in Jefferson County near Beaumont, Tex. Canker had not been found in that county for 16 years. Approximately 525 infected trees on six properties were discovered by inspectors working cooperatively with the State. The properties cover but a small area, however, and there are no citrus nurseries in the vicinity. The infected trees were promptly destroyed by relief workers and all properties in this general area were then given a close inspection with negative results. Inspection is carried on in eight counties in the Galveston-Houston-Beaumont area, and relief workers are eradicating worthless citrus trees. In the 4-month period ending December 21, over a million such trees had been removed from five of these counties. All citrus trees are being removed from over 98 percent of the properties on which these trees are known to exist.

Results of season's inspection for phony peach disease.--Four lines of activity were pursued in the control program in the field season of 1935: (1) Intensive inspection and eradication of all diseased trees in the environs of commercial nurseries throughout the infected area; (2) a survey, as comprehensive as funds would permit, beyond the limits of known infection for the purpose of locating and eradicating any undiscovered outlying infections, and an attempt, through State cooperation, to effect eradication of such infections; (3) intensive inspection and eradication in the lightly infected States; and (4) continuing, insofar as practicable, intensive inspection and eradication of diseased trees in the commercial belt of the generally infected area of the Southeast. The above outline has been followed to the extent that the most complete survey of recent years in the States of Delaware, New Jersey, Maryland, Virginia, West Virginia, Kentucky, and Indiana (none of which were known to be infected) was accomplished this season. This survey resulted in finding infected orchards in two counties in Maryland and five counties in Kentucky. A comprehensive survey was also made of the lightly infected States of Missouri, Illinois, Arkansas, Tennessee, North Carolina, and South Carolina, and in the commercial areas of the generally infected States of Texas, Louisiana, Mississippi, Alabama, and Georgia. The phony peach disease was found on less than 1 percent of the 9 million trees inspected in the 13 known infected States. Comparison with former years shows a marked decrease in the number of trees found infected in the generally infected area, and results point distinctly toward the practicability of control. The work of 1935 also included the inspection in 12 States of zones surrounding 113 commercial peach nurseries, 26 of which were found to be exposed to infection.

W. P. A. project on control of phony peach disease is one-third completed.--Worthless peach trees destroyed by W. P. A. workers for control of the phony peach disease in 11 infected States from early in August to the close of the year reached 6½ million. The escaped peach trees outnumbered the abandoned orchard trees two to one. It is roughly estimated that the project is one-third completed.

Pennsylvania establishes white pine blister rust control areas.--Under an order of the Department of Forests and Waters, which became effective January 15, the greater part of Pennsylvania, embracing 44 counties, has been declared a white pine blister-rust control area, within which no currant or gooseberry plants may be planted or maintained. A second area consisting of zones surrounding a nursery in Erie County was also established by this order.

Foreign visitor witnesses inspection of shipments in transit.--Leonard S. McLaine, Chief of the Division of Foreign Pests Suppression, Entomological Branch of the Canadian Department of Agriculture, while passing through Chicago on January 6, was conducted, on request, through the Post Office Terminal and witnessed the system of transferring packages by means of the conveyor belt and the manner in which shipments of plant material may be held out and inspected by Bureau inspectors, through the cooperation of the postal employees.

BEE CULTURE

Investment in bee culture in Pacific States.--F. E. Todd, in charge of the Pacific States Bee Culture Field Laboratory, Davis, Calif., reports that the investment in bee culture of the five Western States served by that laboratory has been estimated at about $6,000,000 and that the annual gross income is slightly over $1,000,000.

Pollen reserve studies.--Mr. Todd also reports that studies have been initiated on the relationship of pollen reserve in the colonies to the production of orange honey. A survey of the pollen reserves in commercial colonies showed a wide variation within each apiary. The average pollen reserve in southern California colonies was sufficient to support a queen's activity during only 4 days of bad weather, whereas those in the San Joaquin Valley were sufficient for a week. Unlike other factors affecting the wintering of colonies, such as honey stores, bee population, and shelter, it is found that beekeepers know nothing as to the pollen requirements or the pollen reserves in the colony. This work is being looked upon with great interest.

Buckeye distribution and honey plant locations.--According to Mr. Todd, surveys have been made of the buckeye distribution and possible honey-plant locations in the Sierra Nevada Mountains between Eldorado and Tulare Counties, Calif. This work is looking toward the use of these areas by beekeepers threatened with great losses from airplane dusting.

Beeswax investigations.--Mr. Todd states that 70 samples of crude beeswax have been subjected to physical tests, such as melting point, solidifying point, density, and refractive index. Chemical tests include the determination of ash, acid value, saponification value, and Hanus iodine number. The samples have also been tested for bleaching qualities by exposure to sunlight, by the use of absorbing agents, and by chemical processes.

Airplane dusting.--Spray poison by airplane dusting, Mr. Todd states, has reduced the laboratory apiary by 82 percent since July 1.

Influence of pollen reserves.--C. L. Farrar, of the Intermountain Bee Culture Field Laboratory, Laramie, Wyo., has submitted the following table contrasting two extremes in management of two good colonies. Both colonies were headed by sister queens that maintained good broodnests during the 1935 season. Colony No. 1 was wintered during 1934-35 with 700 square inches of pollen and was given a second queen on June 5, 1935. Colony No. 4 wintered during 1934-35 with only a trace of pollen (38 square inches) and was run as a normal single-queen colony.

Date of record	Colony No. 1		Colony No. 4	
	Bees	Loss or gain in honey	Bees	Loss or gain in honey
	Thousands	Pounds	Thousands	Pounds
October 6, 1934-----	49.0	--	40.0	--
May 29, 1935---------	25.8	-65.16	17.8	-57.31
June 21, 1935--------	32.7	16.43	7.8	- 5.85
July 3, 1935---------	47.4	5.80	9.0	- 2.20
July 17, 1935--------	64.7	62.44	7.9	4.44
July 31, 1935--------	84.6	91.45	18.5	9.42
August 14, 1935-----	100.6	157.01	32.5	58.17
August 28, 1935-----	105.3	155.78	40.1	58.54
September 12, 1935--	96.5	65.89	43.3	26.38
Net crop----------	--	489.64	--	91.59

Supersedure studies.--In connection with the supersedure studies being conducted cooperatively by the Southern States Bee Culture Field Laboratory, Baton Rouge, La., and the Intermountain Bee Culture Field Laboratory, Laramie, Wyo., several hundred queens from the Southern States have been shipped to Laramie and introduced into commercial apiaries in Colorado. Observations will be made of the effect of seasonal environment on queen introduction, the determination of the length of the active productivity period prior to normal supersedure, and queens from the various commercial breeders will be compared with each other, as well as with queens produced locally by normal supersedure.

Observations on queen mating.--As a result of observations in a commercial queen-rearing apiary, E. Oertel, Baton Rouge, found that of the total queen cells produced only about half developed into commercially salable queens. The causes of this 50 percent loss have not been ascertained.

IDENTIFICATION AND CLASSIFICATION OF INSECTS

Two European species of Tropiphorus in North America.--As far as known, the weevil genus *Tropiphorus* has not been reported heretofore from North America. The National Museum collection now contains two species, both collected in Nova Scotia--*T. tomentosus* Mshm. from Truro in 1913, R. Matheson, collector; and *T. obtusus* Bonsd. from Yarmouth in 1933, collected by F. C. Gilliatt and submitted by W. J. Brown. The latter identification, though probably correct, is to be considered tentative. Most of the species of *Tropiphorus* are reported as rare or local in European literature and do not appear to be of any special economic importance.

Five species of weevils from Peruvian potatoes.--In some material recently received from J. Wille, Lima, Peru, were a number of weevils taken from potato tubers. L. L. Buchanan has recognized five species in the lot, namely, *Premnotrypes solani* Pierce, *Trypopremnon latithorax* Pierce, and three apparently undescribed species (two of *Premnotrypes* and one of *Trypopremnon*). Both *P. solani* and *T. latithorax* were described in 1914 from specimens reared in Washington, D. C., from Peruvian potatoes, but until this year no additional specimens of either species have been received at the Museum. The material now available for study indicates that *Premnotrypes* and *Trypopremnon* can hardly be maintained as distinct genera.

A new American parasite of the oriental fruit moth.--Two specimens of a species of Tachinidae reared from *Grapholitha molesta* Busck by R. B. Neiswander, of the Ohio Agricultural Experiment Station, have been identified by D. G. Hall as *Admontia degeeriodes* Coq. This appears to be the first record of this host-parasite association.

A new hymenopterous parasite of Fuller's rose beetle.--Two specimens reported as having been reared from Fuller's rose beetle (*Pantomorus godmani* Crotch) and received from Kenneth J. Hayward, Entomologist of the Experiment Station of Concordia, Entre Rios, Argentina, have been identified by C. F. W. Muesebeck as an apparently new species of the braconid genus

Microctonus. Although no information concerning the stage of the parasitized host accompanied the specimens, in all probability the parasite attacks the adult beetle, as this is the habit of all species of this genus and closely related genera for which there are records of behavior and biology. Species of Microctonus are known to parasitize adults of Curculionidae, Carabidae, Chrysomelidae, and Tenebrionidae, but the individual species appear to be closely restricted in their host associations.

Dialeurodes chittendeni Laing from wild rhododendron in Tennessee.--The aleyrodid Dialeurodes chittendeni Laing was originally described from England in 1928. In 1930, and each year since then, it has been intercepted in the course of quarantine inspections, the source of the material in all cases being England. The first report of the occurrence of the species in the United States was based on the finding of specimens at Kennett Square, Pa., in 1932. It was next reported from Seattle, Wash., in 1933, and the following year large numbers of specimens were sent to the Insect Identification Division from Seattle, Takoma, and Medina, Wash., where it was said to be well established on cultivated rhododendron. Specimens were also received the same year from Oyster Bay and Sunken Meadow, Long Island. In October 1935, a single specimen, later identified by P. W. Mason, was intercepted in California on rhododendron sent from Johnson City, Tenn., and since then W. R. Wood, of the Division of Foreign Plant Quarantines, collected a considerable number of individuals on wild rhododendron at Unicoi, Tenn. These specimens were also identified by P. W. Mason.

Another European record for San Jose scale.--Specimens of a scale insect from some unspecified country in the Balkan peninsula, obtained at the District of Columbia Inspection House from Prunus laurocerasus, have been identified by Harold Morrison as Aspidiotus perniciosus Comst. This is an addition to some half dozen records of the occurrence of this coccid in Europe, and its reshipment to this country seems to indicate the probability of rather rapid dissemination throughout that continent in much the same manner it has followed in the United States.

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